

DEPARTMENT OF THE INTERIOR DEPARTMENTAL MANUAL

Aviation Management _____ **Part 351 Aviation Operations**

Chapter 2 Aircraft Equipment and Maintenance _____

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2.1 Purpose. This chapter prescribes minimum aircraft equipment and maintenance standards for all activities within the Department of the Interior (DOI). This applies to DOI fleet aircraft, commercial aviation operations, and privately-owned aircraft operated on official business.

2.2 Equipment. Aircraft, engines and equipment shall be operated within the limitations specified by the manufacturer. The following equipment is in addition to, or further defines, 14 CFR 91 and/or 135 requirement for the flight to be conducted, and the aircraft's certification equipment requirements:

A. Fire Extinguishers. The fire extinguisher(s) as required by 14 CFR 135 shall be a hand-held bottle, minimum 1.5 pound capacity, containing Class B and C extinguishing agents, and mounted accessible to the flight crew.

B. VHF-AM Aeronautical Transceiver. All point-to-point 14 CFR 135 aircraft shall have, as a minimum, the communications capability required by the FAA for operation as a 14 CFR 135 certificate holder. If the point-to-point flight is conducted by other than a 14 CFR 135 certificate holder (e.g. approved cooperator aircraft), communication capability shall, as a minimum, enable flight following. Aircraft flying special use missions and all DOI owned or operated aircraft shall have a minimum of one 720-channel VHF-AM Aeronautical Transceiver installed, operating in the 118.000 MHz to 135.975 MHz in 25 kHz channel increments, and have a minimum of five watts carrier power output.

C. Floats. Single-engine helicopters and single-engine airplanes operated beyond power-off gliding distance of shore shall be float-equipped except where established traffic flow requires aircraft to operate beyond gliding distance to shore during takeoffs and landings. Multiengine aircraft operated at a weight that will allow it to climb, with the critical engine inoperative, at least 50 feet per minute, at an altitude of 1,000 feet above the surface may be operated over water without floats. DOI fleet land aircraft may be repositioned (ferried) with only flight crewmembers on board without the required floats.

D. Emergency Equipment for Overwater Flights. For overwater flights the emergency equipment in **ALSE Handbook**, chapter 3 is required.

E. Emergency Locator Transmitter (ELT). Details are contained in **ALSE Handbook**.

F. Seat Belts and Shoulder Harness. Details are contained in **ALSE Handbook**.

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G. ~~Helicopter Flight Time Recording Devices.~~ A flight recording meter reading in hours and tenths and activated by an engine or transmission oil pressure switch wired in series with a collective switch, or equivalent system, shall be required for recording flight time in helicopters.

H. ~~Animal Tracking Antennas.~~ All animal tracking antenna installations shall meet FAA requirements. Animal tracking antennas mounted on high performance aircraft (cruise speed greater than 180 knots and/or lacking wing struts) shall have a FAA certificated designated engineering representative (DER) approval. This approval will be accomplished to determine location of mounting antennas and to establish flight profile in all aspects of flight including climb, cruise, high altitude, descent, and flights into instrument meteorological conditions. The antennas must also be visible to the flight crew, either by direct vision or through mirrors mounted to provide an undistorted view of the installation. A structural and vibration analysis must be accomplished to determine the levels of stress and vibration when the antennas are installed. This approval will not necessarily meet the needs for a Supplemental Type Certificate (STC); however, it will establish an engineering background for safety.

I. ~~Propeller Arc Markings.~~ Float equipped fleet aircraft will have propeller arc warning stripes conspicuously marked on each float.

2.3 ~~Special Use.~~ The following are additional requirements for special use activities.

A. ~~Animal Capture, Eradication and Tagging.~~ Special equipment requirements for animal gathering, capturing, eradication, and tagging are contained in the OAS ~~Aerial Capture, Eradication and Tagging of Animals~~ (ACETA) Handbook.

B. ~~Firefighting Aircraft Markings.~~ Firefighting aircraft shall have high visibility markings or 3-point strobe and pulse landing light system. The *Leadplane Guide* will become policy when issued.

C. ~~Aerial Delivery.~~ Airtankers, helitankers, smokejumpers, and air-to-ground aerial delivery aircraft and equipment shall be approved by OAS in conjunction with the appropriate board criteria (Interagency Airtanker Board/Smokejumper Aircraft Screening and Evaluation Board).

D. ~~Intercom System.~~ An intercom system capable of serving the pilot and observer compatible with required protection headgear shall be required.

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E. ~~Rappel or Short Haul Attachment Devices~~ Attachment devices used for rappelling or short haul shall have OAS or interagency approval.

F. ~~First Aid Kits~~ A first aid kit is required in accordance with the ~~ALSE Handbook~~.

G. ~~Survival Kits~~ A survival kit is required in accordance with ~~ALSE Handbook~~.

H. ~~Smokejumper Restraint Benches~~ The use of the smokejumper restraint benches (Simula seats) are limited to smokejumping missions only, regardless of aircraft certification. Smokejumpers are required to wear their protective suits and helmets for take-off and landing when seated on the benches during smokejumper retrieval operations. The benches will be removed and replaced with conventional forward-facing (or rear-facing) passenger seats when a smokejumper aircraft is used to transport passengers.

2.4 Maintenance.

A. ~~DOI-Owned or Operated Aircraft and Privately Owned Aircraft Carrying DOI Passengers on Government Business~~

(1) ~~Maintenance Program~~. Each DOI entity that operates aircraft shall be responsible for developing and implementing a maintenance program to insure that aircraft are kept in a continuous state of airworthiness. It shall consist of, but not be limited to the following items:

- (a) A listing of persons authorized to perform maintenance.
- (b) A listing of persons authorized to return aircraft to service.
- (c) Inspection program.
- (d) Maintenance records.
- (e) Airworthiness directives and/or special inspections.
- (f) Weight and balance of aircraft.
- (g) Record of flight tests and results.
- (h) Overhaul and replacement schedule.

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- (i) Issuance of special flight permits.
- (2) ~~Inspection Programs.~~ Aircraft inspection programs shall comply with paragraph 2.4.A(2)(a) and (b), or (c), or (d) below. All other paragraphs of 2.4A(2) apply.
 - (a) Annual inspection. No reciprocating single or multi-engine powered small aircraft, single-engine turbo-propeller powered small aircraft, small single-engine turbo-jet, or turbine powered helicopter shall be operated unless within the preceding 12 calendar months, it has had:
 - (i) An annual inspection in accordance with 14 CFR 91 and has been approved for return to service by a person authorized by 14 CFR 43; or,
 - (ii) An inspection for the issuance of an airworthiness certificate, and
 - (b) 100-Hour Inspection. No reciprocating single or multi-engine powered small aircraft, single-engine turbo-propeller powered small aircraft, small single-engine turbojet, or turbine powered helicopter shall be operated unless within the preceding 100 hours of time in service it has received a 100-hour inspection in accordance with 14 CFR 91 and approved for return to service by a person authorized by 14 CFR 43; (overflight of the 100 hours as authorized in 14 CFR 91 is only for ferry flight to a maintenance facility); or
 - (c) Progressive Inspections. The progressive type aircraft inspection program is approved for aircraft for which this maintenance system has been established in accordance with the manufacturer's specifications and 14 CFR 91. Use of this system deletes the requirement for the annual and/or 100-hour inspections; or
 - (d) Approved Inspection Systems. No large airplane, (more than 12,500 pounds certificated takeoff weight) multiengine turbo-jet airplane, or multiengine turbo-propeller powered airplane shall be operated unless it is inspected in accordance with an inspection program selected under 14 CFR 91. The selected inspection program shall be approved by the Federal Aviation Administration (FAA) for the particular airplane. Large helicopters (more than 12,500 pounds gross weight) may be maintained in accordance with:
 - (i) This paragraph, or
 - (ii) Paragraph 2.4.A(2)(a) and (b) or (c) of this section, or,
 - (iii) A continuous maintenance program.

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(e) Airworthiness Directives and/or Special Inspections. No aircraft to which an FAA Airworthiness Directive (AD), Manufacturer's Mandatory Maintenance Bulletin (when so required by operations specifications or identified by the OAS Director), Factory or FAA-approved Recommended Retirement Time or Time Between Overhaul (TBO) applies, shall be operated except in accordance with those terms.

(f) Altimeter and Static Pressure Systems Inspections. Any aircraft that is subject to flight under instrument flight rules (IFR) shall have its altimeters and static pressure systems tested and inspected in accordance with 14 CFR 91.

(g) Transponder Inspections. All aircraft equipped with an Air Traffic Control (ATC) transponder shall have that transponder tested and inspected in accordance with the requirements of 14 CFR 91. All transponder-equipped VFR aircraft with automatic pressure altitude reporting capabilities shall be tested and inspected in accordance with 14 CFR 43, Appendices E and F.

(h) Weight and Balance. The current empty weight and center of gravity for all aircraft shall be calculated from values established by actual weighing of the aircraft every 36 calendar months. This does not apply to those aircraft which have an FAA-approved weight and balance control system or to single-engine aircraft except OAS may require single-engine aircraft to be weighed at periods of configuration changes and installation or removal of equipment which may change the aircraft's center of gravity.

(i) All weighing of aircraft shall be performed on scales that have been certified as accurate within the preceding 24 calendar months. The certifying agency may be any accredited weights and measures laboratory.

(ii) At the time of aircraft weighing a list of on-board equipment shall be compiled. The list of equipment shall include the name of each item installed, along with the weight and arm of each item. Each page of the equipment list shall identify the make, model, serial number and registration number of the aircraft. Each page of the equipment list shall be dated and contain the signature and certificate number of the person certifying that the listed items were in the aircraft at the time of weighing. The weight and balance and equipment list shall be revised each time equipment is installed or removed.

(i) Maintenance Manuals. All aircraft shall be maintained in accordance with the factory-approved maintenance manuals.

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(j) Maintenance Records. Aircraft maintenance records shall be maintained in accordance with 14 CFR 43 and 91.

(k) Maintenance Personnel. Maintenance shall be performed only by those persons authorized in accordance with 14 CFR 43. A DOI pilot may perform preventive maintenance on any aircraft operated by that pilot. Such preventive maintenance shall not be contrary to any FAA or OAS approved maintenance system. A representative list of preventive maintenance items may be found in 14 CFR 43, Appendix A(c). An aircraft shall only be returned to service by a person authorized by 14 CFR 43 and an entry has been made in the aircraft maintenance record.

(l) Flight Tests. No passenger shall be carried during a flight test. Flight test results shall be recorded in the aircraft maintenance record. Aircraft shall not be operated until it has been approved for return to service in accordance with 14 CFR 43 and a functional flight test performed by a pilot certificated in accordance with 14 CFR 61 following:

- (i) Aircraft overhauls,
- (ii) Major repairs, or
- (iii) Replacement of engine, power train, rotor system, retractable landing gear system, flight controls, or adjustment of the flight control system.

(m) Overhaul And Replacement. All aircraft, aircraft engines, propellers, or appliances for which the manufacturer has recommended an overhaul or replacement time shall be overhauled or replaced in accordance with such recommendations or FAA-approved overhaul intervals. Replacement components for DOI owned aircraft shall either be new, or have been rebuilt/overhauled by an OAS-approved facility, to manufacturer's new component standards. Replacement components that cannot be rebuilt to manufacturer's new tolerances shall be overhauled to manufacturer's recommended tolerances.

(n) Special Flight Permits. When needed, an FAA special flight permit is required for DOI certificated aircraft. Approval by the Chief, Division of Technical Services, OAS Headquarters, or Alaska Regional Director is required prior to flight of any DOI aircraft that:

- (i) Does not meet its type design due to mishap damage, or
- (ii) Exceeds expiration of maintenance inspection time, or

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(iii) **Exceeds** component replacement time.

(3) **Minimum Equipment.** Each aircraft shall meet its type design, including equipment, placards and markings, and aircraft documents. All type design required instruments and equipment installed in the aircraft shall be FAA-approved and in operable condition. However, aircraft may be operated with inoperable equipment as follows:

(a) ~~Multiengine Aircraft.~~ Multiengine aircraft shall have a Federal Aviation Administration (FAA) approved minimum equipment list for each aircraft in accordance with 14 CFR 91.213 subparagraphs (a) and (c).

(b) ~~Turbine Powered Aircraft.~~ Turbine powered aircraft shall have an FAA-approved minimum equipment list for each aircraft in accordance with 14 CFR 91.213 subparagraphs (a) and (c).

(c) ~~Single Reciprocating Engine Aircraft.~~ Single reciprocating engine aircraft shall be operated and maintained in accordance with 14 CFR 91.213 subparagraph (d).

(d) ~~Deviations.~~ Any deviations to the above must be accomplished in accordance with 14 CFR 91.213 (e).

(e) ~~Minimum Equipment List.~~ Minimum Equipment Lists for uncertificated aircraft shall be developed by the Bureau and requires acceptance by the OAS Director.

B. ~~Privately Owned and Operated Aircraft Without Passengers, Air Crewmembers, or Flight Crewmembers other than the Owner.~~ The aircraft, including avionics, shall be fully maintained in accordance with 14 CFR 91.

C. ~~Vendor Aircraft.~~

(1) Aircraft shall be maintained in accordance with applicable FAR's and the operator's operations specifications. Aircraft components which have reached published limitation specified by FAA or the manufacturer shall be inspected, overhauled, and/or replaced as required by FAA or by the manufacturer's publication. Engines and/or major components having an established time between overhaul (TBO) or finite life shall be replaced in accordance with manufacturer's recommendation.

(2) Maintenance performed on Single Engine Airtankers operated in accordance with 14 CFR 137 shall be required to be in accordance with the following:

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- (a) A 100-hour inspection program and,
- (b) An annual inspection program, or
- (c) A progressive aircraft inspection program.

(3) Aircraft shall be maintained in accordance with all applicable Mandatory Manufacturer's Bulletins as required by operations specifications or identified by OAS and FAA Airworthiness Directives (AD).

(4) Aircraft Parts. All vendor aircraft parts shall have written traceability to the original aircraft and engine manufacturer or an authorized independent representative(s) or an FAA production approval holder. Government surplus parts must have documentation showing that the parts were from a source approved by the original airframe or engine manufacturer, either in the unopened original packaging or with complete historical records at the time of installation.

D. ~~Uncertificated Ex-Military Aircraft Operated by DOI.~~

(1) Uncertificated aircraft shall be maintained and inspected in accordance with an active military maintenance program for the specific make, model, and series of aircraft being operated.

(2) If an active military maintenance program for the specific make, model, and series is not available, an alternative program for a similar make, model, and series may be substituted when equivalency can be determined by the OAS Director. The requesting bureau/agency shall review the proposed substitute program and provide necessary information to support the proposal.

(3) When aircraft are operated which no longer have an active military maintenance program, an equivalent program to the last acting military maintenance program can be approved by the OAS Director. The requesting bureau/agency shall develop an equivalent program to include considerations of the following issues:

- (a) Malfunctions and defect reporting system.
- (b) Service bulletin, technical bulletin development and issue.
- (c) Manual revision for flight, maintenance, and parts manual.
- (d) Safety of flight notices.

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(e) System for monitoring, updating TBO/finite times.

(4) Modifications to ex-military aircraft shall be approved by the OAS Director, before altering the aircraft. Data used for modifying aircraft shall conform to the same standards required to modify certificated civil aircraft. Documentation of modifications shall conform to the original military maintenance record system with the addition of the use of FAA Form 337. The copy shall not be forwarded to the FAA.

2.5 ~~Aircraft Approval Documents.~~**A. ~~Aircraft Data Cards.~~**

(1) Aircraft operated by DOI, except those of the USFS fleet, shall be inspected by an OAS approved inspector and have a current Aircraft Data Card detailing the authorized uses.

(2) Vendor aircraft excluding those flying point-to-point or high reconnaissance missions, shall be approved by an OAS approved/accepted inspector prior to use. (Cards issued by USFS inspectors meet this requirement).

(3) Cooperator aircraft, other than those from agencies issued agency-wide approval by the OAS Director, shall have a current Aircraft Data Card issued by an OAS approved inspector or a letter issued by the respective Regional/Area Director.

B. ~~Approval Duration.~~

(1) All DOI and vendor special-use Aircraft Data Cards shall be valid for no more than 18 calendar months.

(2) Aircraft administrative approval documents for point-to-point aircraft and high recon aircraft will be valid for no more than 38 calendar months.

(3) OAS will rescind data cards of aircraft failing to maintain required standards.